

# Dietary habits, energy drink consumption, obesity, and physical activity in marginalised Palestinian schools in the West Bank: a cross-sectional study

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## Abstract

**Background** Socioeconomic factors have been found to be related to adolescents' dietary habits, physical activity, and body mass index (BMI). 50 schools in the West Bank that face socioeconomic and political challenges in terms of infrastructure, academic achievement, dropout rate, limited access, geography, and economic status were labelled as marginalised by the AMIDEAST School Support Program (SSP). This study aimed to describe and assess factors relating to dietary habits, energy drink consumption, BMI index, and physical activity in Palestinian adolescents attending marginalised schools.

**Methods** Marginalised schools (n=50) were stratified by district and gender to select a random sample of 20 schools. All students in sixth or ninth grades in the targeted schools were interviewed one-to-one by one of 14 senior dental students who were trained and calibrated by a public health specialist. The schoolchildren were asked about their dietary habits, such as daily consumption of added sugar, carbonated drinks, sweetened juices, and energy drinks. Daily intake of milk, fruits, vegetables, nuts, and non-vegetarian food were also assessed. In addition, schoolchildren's physical activity, father's employment and mother's education were recorded. Weight and height were measured, and BMI percentile was calculated. Parental informed consents were collected by the school administration. Ethics approval for the study was obtained from Al-Quds University Scientific Research Ethics Committee.

**Findings** A total of 1282 students out of 1308 completed the questionnaire; a response rate of 98%. Of our sample, 6% (77 of 1282) were underweight (5th percentile or under) and 34% (436 of 1282) were overweight or obese (85th percentile or over). Among sixth graders, 43% (155 of 360) of the boys and 24% (59 of 247) of the girls were overweight or obese. The opposite was true for ninth graders; 20% (54 of 268) of the boys and 42% (158 of 377) of the girls were overweight or obese. Ninth graders had more added sugar in their diet than sixth graders ( $p=0.002$ ), less milk consumption ( $p<0.0001$ ), more energy drink consumption ( $p=0.001$ ), and less physical activity ( $p<0.0001$ ). Consumption of carbonated and sweetened drinks was associated with being overweight or obese ( $p=0.016$ ,  $p=0.001$ ). Consumption of carbonated drinks was higher among children of mothers with a high-school education than among children of mothers with college degrees ( $p<0.0001$ ). In addition, children of mothers educated to high school level or below were associated with being underweight ( $p=0.05$ ).

**Interpretation** The results of this study suggest that dietary habits worsen between the ages of 12 years and 15 years. The mother's level of education is an important factor in being overweight or underweight. Interventions to increase awareness of the importance of healthy diets and physical activity among adolescents and their mothers should start before the age of 12 years.

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## Contributors

SA contributed to the study design, literature review, data collection, and drafting of the Abstract. EK contributed to the study design, data collection, data analysis, and interpretation of data. AH contributed to data collection and data entry. FM contributed to the study design and data collection. All authors have seen and approved the final version of the Abstract for publication.

## Declaration of interests

We declare no competing interests.

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